

### **REMARKS**

Claims 10-33, 47 and 48 are the claims pending in the application. Applicant acknowledges the acceptance of the election of claims 10-33, and thus has canceled claims 34-46 without prejudice or disclaimer. Applicant has added new claims 47 and 48 to more particularly define the invention. Applicant gratefully acknowledges the Examiner's allowance of claims 1-9. Applicant has made minor amendments to Figures 5 and 6 and the specification, as indicated above, to include minor conforming changes and address inadvertent typographical errors, and thus has included replacement sheets for Figures 5 and 6. Further, Applicant replaces the original Figures 1-4 with replacement sheets to better show the details of the invention consistent with the drawing requirements of the MPEP, voluntarily. Finally, Applicant respectfully traverses the prior art rejection based on the following discussion.

#### **I. The Prior Art Rejection**

Claims 10-33 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over Brown, et al. ("Brown")(U.S. Patent No. 4,764,316).

##### **A. The Rejection Based on Brown**

Regarding claims 10 and 24, Brown fails to disclose, teach or suggest the features of independent claim 10, and related dependent claims 11-23, including free fuel particles constituting at least 40 weight percent of the pressed thermobaric explosive. Similarly, Brown also fails to disclose, teach or suggest the features of independent claim 24, and related dependent claims 25-33, including the pressed thermobaric explosive includes at

least 40 weight percent of free fuel particle. (See Page 6, lines 5-10; page 9, lines 19-22; and Pages 22-23, Table 1).

Indeed, Figures 1-2B of Brown merely disclose or suggest a conventional process for preparing solid propellant grains using thermoplastic binders and products thereof. In particular, energetic particulates, such as, particulate aluminum, thermoplastic elastomer particulates and plasticizers are added to a dry mixer and blended to achieve a homogeneous distribution of components in a propellant grain. This process is focused on providing cast propellant grains with thermoplastic elastomer binders to ensure a high-density propellant grain with energetic particulates uniformly distributed, which can be scaled up to produce large rocket motors. Consistent with this focus, and as suggested by Applicant, conventional systems like Brown provide a diminished return of increasing fuel content where the fuel content typically does not exceed 35 weight percent. Thus, conventional thermobaric weapons like Brown are designed relatively large in size to furnish adequate fuel, which results in weight and size limitations. (See Brown at Abstract; Column 1, lines 5-10; Column 1, line 35-Column 2, line 2; Column 2, lines 35-40; Column 5, lines 10-53; and Figures 1-2A; and Application, Page 4, lines 2-9).

To be sure, Applicant agrees with the Examiner that Brown does not disclose or suggest aluminum, at a large weight percentage, let alone at 40 weight percent. Further, as required by the MPEP, the Office Action does not explicitly indicate where Brown teaches or suggests that it would be obvious to use aluminum at 40 weight percent. (See Office Action, Page 3, First Paragraph).

Contrary to the above "obviousness" assertion in the Office Action, Brown, as indicated above and below, clearly discloses a high weight percentage of propellant grain,

such as, 75 percent, where energetic particulates, such as, fuel particulates, for example, aluminum, oxidizer particulates and plasticizers are uniformly distributed. Accordingly, the energetic particulates would, for example, only be about 25 weight percent. Further, Brown suggests that the plasticizer may be up to 18 weight percent of the propellant charge, thus leaving a small weight percentage of the fuel particulates. Indeed, Brown explicitly indicates that the particulates, including the fuel particulates, are a “relatively low percent of the total formulation.” Since Brown explicitly teaches a low weight percentage of particulates, including fuel particulates, Brown clearly teaches away from modifying this preferred formulation to have aluminum at 40 weight percent like Applicant’s claimed invention. Thus, Brown fails to provide the requisite disclosure or teaching to support such a modification (as suggested in the Office Action). Therefore, Brown does not disclose or suggest, including free fuel particles constituting at least 40 weight percent of the pressed thermobaric explosive. (See Brown, Column 2, lines 50-65; Column 3, lines 36-46; and Column 5, lines 34-39 (with emphasis)).

For emphasis, Brown teaches a conventional process for forming solid propellant grains with a low total weight percentage of fuel particulates, let alone, free fuel particles constituting 35 weight percent of a pressed thermobaric explosive, let alone, 40 weight percent of a pressed thermobaric explosive, whereas Applicant discloses a pressed thermobaric explosive where the free fuel particles constitute at least 40 weight percent of the pressed thermobaric explosives as claimed. (See above).

Please note, Applicant teaches the use of “free fuel particles,” which are substantially uncoated prior to pressing, whereas Brown suggests coating the fuel particles as part of the blending process prior packing the dry blend into a mold or casing,

what is analogous to pressing. Therefore, Applicant traverses the assertion in the Office Action that Brown discloses or suggests Applicant's invention. (See above; and Brown, Column 5, lines 34-65).

For at least the reasons outlined above, Applicants submits that Brown, alone or in combination, does not disclose, teach or suggest, including free fuel particles constituting at least 40 weight percent of the pressed thermobaric explosive. Similarly, Brown also fails to disclose, teach or suggest including the pressed thermobaric explosive including at least 40 weight percent of free fuel particle.

For the reasons stated above, the claimed invention, and the invention as cited in independent claims 10 and 24, and related dependent claims 11-23 and 25-33, is fully patentable over the cited reference.

## **II. Formal Matters and Conclusions**

In view of the foregoing, Applicants submit that claims 10-33, 47 and 48, all the claims presently pending in the application, are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

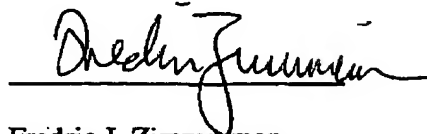
Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

Please charge any deficiencies and credit any overpayment to Attorney's Deposit

Account Number 50-1114.

Respectfully submitted,

Dated: 17 August 2006



Fredric J. Zimmerman  
Registration No. 48, 747

Office of Counsel Code OC4  
Naval Surface Warfare Center  
Indian Head Division  
101 Strauss Ave., Bldg. D-31  
Indian Head, MD 20640-5035  
(301) 744-5603